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**Tractors and machinery for agriculture and  
forestry — Technical means for ensuring  
safety —**

**Part 4:**  
**Forestry winches**

[ISO 4254-4:1990](https://standards.iteh.ai/catalog/standards/sist/5a930c3e-4fcb-4879-8c2c-1c77746db4cc/iso-4254-4-1990)

[Tracteurs et matériels agricoles et forestiers — Dispositifs techniques  
permettant d'assurer la sécurité —](https://standards.iteh.ai/catalog/standards/sist/5a930c3e-4fcb-4879-8c2c-1c77746db4cc/iso-4254-4-1990)

*Partie 4: Treuils pour matériels forestier et de sylviculture*



Reference number  
ISO 4254-4:1990(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 4254-4 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*.

ISO 4254 consists of the following parts, under the general title *Tractors and machinery for agriculture and forestry — Technical means for ensuring safety*:

- Part 1: *General*
- Part 2: *Anhydrous ammonia applicators*
- Part 3: *Tractors*
- Part 4: *Forestry winches*
- Part 5: *Soil-working equipment*
- Part 6: *Equipment for crop protection*
- Part 7: *Combine harvesters, forage and cotton harvesters*
- Part 9: *Equipment for sowing, planting and distributing fertilizers*

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# Tractors and machinery for agriculture and forestry — Technical means for ensuring safety —

## Part 4: Forestry winches

### 1 Scope

This part of ISO 4254 specifies safety requirements for winches used on forestry machinery and agricultural machinery used in forestry.

It applies only to skidding winches mounted on mobile forestry machinery, e.g. skidders and forwarders and on agricultural machinery used in forestry operations. All winches used in cable logging systems are excluded.

ISO 4254-1 provides guidelines and requirements regarding the prevention of accidents arising from the use of tractors and machinery for agriculture and forestry.

It gives general guidelines to be met when designing tractors and machines.

The requirements of ISO 4254-1 shall be met in addition to those given in this part of ISO 4254.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 4254. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 4254 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

1) To be published.

ISO 3108:1974, *Steel wire ropes for general purposes — Determination of actual breaking load.*

ISO 3600:1981, *Tractors and machinery for agriculture and forestry — Operator manuals and technical publications — Presentation.*

ISO 3767-4:—<sup>1)</sup>, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 4: Symbols for forestry machinery.*

ISO/TR 3778:1987, *Agricultural tractors — Maximum actuating forces required to operate controls.*

ISO 4254-1:1989, *Tractors and machinery for agriculture and forestry — Technical means for ensuring safety — Part 1: General.*

ISO 6687:1982, *Machinery for forestry — Winches — Performance requirements.*

### 3 Information plates

**3.1** Bare or uninstalled winches shall be clearly and durably marked with the following information:

- name and address of manufacturer or importer where applicable;
- model of winch;
- year of manufacture;
- serial number;

- e) maximum rated pull, i.e. maximum rated bare drum pull calculated according to ISO 6687.

**3.2** Winches incorporated in a machine such as a skidder or winches that are three-point linkage-mounted shall have decals in a prominent position on the winch/machine or on the winch frame giving the following information for the machine/winch system:

- a) maximum rated bare drum pull for machine/winch;
- b) minimum breaking load of the rope calculated in accordance with clause 7 for the machine/winch system;
- c) maximum diameter of rope, calculated in accordance with 6.1 and clause 7.

A decal in a language acceptable to the user and printed in capital letters, where the decal format and lettering shall conform to existing standards, shall also give the following text:

**WARNING — THE WINCH SHALL NOT BE USED FOR HOISTING**

## 4 Technical publications

The supplier of the winch or machine/winch combination shall also provide the handbooks given in 4.1 and 4.2 in a language acceptable to the user, and prepared in accordance with ISO 3600.

**4.1** The instruction manual shall give complete instructions for the use and maintenance of the winch and, where applicable, at least the following information:

- a) information plate data as in clause 3;
- b) load data:  
 maximum input torque,  
 maximum rated pull at bare drum and full drum respectively;
- c) recommended type, design, material and diameter of rope;
- d) maximum length of rope, dependent upon rope diameter;
- e) description of winch function and power transmission arrangement (for other than mechanically driven winches, system diagrams, giving

maximum pressure and volume flow, or voltage and amperage respectively);

- f) description of safety devices;
- g) instruction for winch operation;
- h) servicing instructions including adjustment of safety devices, rope inspection, preventive maintenance, inspection and lubricating instructions.

**4.2** A parts catalogue shall also be supplied.

## 5 Mechanical safety

**5.1** Where a winch rope passes over an idler pulley, the point of contact with the pulley (nip point) shall be suitably guarded. Arch type fairleads, as used for example on skidders, are excluded.

**5.2** If the winch controls are so located that the winch operator can reach rope or drum during powered operations of the winch, these shall be protected up to the idler pulley.

**5.3** Detachable winches shall be designed for easy and safe attachment and removal including supports, providing stability when a three-point linkage or similarly mounted winch is detached.

**5.4** Where a winch is attached to a three-point linkage or similar point and where it can in normal operation produce a risk of the vehicle overturning, supports or other devices providing mechanical stability shall be provided.

## 6 Drum

**6.1** The ratio between barrel diameter and rope diameter shall not be less than 10 for ropes up to and including 16 mm in diameter, and not less than 8 for ropes larger than 16 mm in diameter.

**6.2** The safety distance given in ISO 6687 shall be used to calculate the rope length.

**6.3** The winch shall be designed to prevent the rope from running off over the flanges when the top layer by any fault reaches above the flanges.

## 7 Rope breaking load

The static breaking load of the recommended size of new rope established according to ISO 3108 shall not be less than 1,4 times the maximum rated pull of the machine/winch system.

## 8 Rope fastening

The drum shall be provided with a device to attach the rope, designed to avoid rope damage, especially at the attachment point. This device shall meet the requirements of 8.1 to 8.3.

**8.1** The device for attaching the rope to the drum should be of the breakaway anchor type so that in the event of the load sliding out of control with the winch in free-spool mode, the rope will disengage from the drum.

**8.2** The device shall be designed to disengage, without any rope on the drum, at less than 0,3 times the maximum rated bare drum line pull. With three turns of rope around the drum, the device shall withstand 1,25 times the maximum rated bare drum line pull.

**8.3** The device shall not disengage accidentally when the rope is being manually spooled off the drum.

## 9 Brake

**9.1** The brake system, if any, shall automatically be applied when the power to the drum is disconnected. A release mechanism may be included to allow free spooling.

**9.2** The brake system or equivalent, if any, shall hold a load equal to at least 1,25 times the maximum rated pull of the winch without slippage.

**9.3** The brake system, if any, shall give smooth stopping and releasing of the drum.

## 10 Overload device

**10.1** The overload device, if any, shall ensure that the maximum permissible pull of the machine/winch system cannot be exceeded.

**10.2** It shall not be possible to alter the setting of the overload device, for example slip clutches, relief valves, etc., without a minimum set of tools.

## 11 Controls

**11.1** The maximum forces necessary to operate manual controls shall not exceed those given in ISO/TR 3778.

**11.2** The controls shall be so designed and located as to minimize the possibility of unintentional winch actuation.

**11.3** Power controls shall, when released, automatically return to the neutral position, except in the disconnect position.

**11.4** Brake controls shall, when released, automatically apply the brakes.

**11.5** Brake controls and/or disconnect clutch controls may have a free-wheeling position lock.

**11.6** The fixed winch control shall be so located that the operator is protected at all times from a whipping or broken cable or hooks. Its function and method of operation shall be indicated on or near the control by symbols according to ISO 3767-4.

**11.7** The winch control, if in the form of a lever, should be arranged so that the "winch in" function will occur when the control is moved generally towards the operator.

**11.8** The brake release and free spool function, if a lever, should occur when the control is moved generally away from the operator.

## 12 Rearward roll-over preventive devices

These requirements apply to agricultural tractors.

**12.1** The roll-over preventive devices, if any, shall ensure that the winch pull is stopped before a pre-set inclination angle of the machine/winch system is exceeded.

**12.2** It shall not be possible to alter the setting of the roll-over preventive devices without a minimum set of tools.

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Price based on 3 pages

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